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In re Application of:

Shinji TSUJIO

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For: ERASABLE INK AND WATER-BASE BALLPOINT PEN USING  
SAMERECEIVED  
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TC 1700 MAIL ROOMDECLARATION

Honorable Commissioner of Patents and Trademarks

Washington, D.C. 20231

SIR:

I, Shinji TSUJIO, hereby declare that:

(1) I reside at 96, Mozuryonan-cho 1-cho, Sakai-shi,  
Osaka-fu, Japan.

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(2) I graduated from Kinki University, Faculty of Engineering, Applied Chemistry in March 1972.

Since April 1972 up to the present time, I have been employed by SAKURA COLOR PRODUCTS CORPORATION, the assignee of the above-identified application, and mainly engaged in development work in the field of painting instruments, writing utensils(e.g. ink, ink-container, leads) and other color products. I am inventor of the above-identified application.

### (3) Experiment

In order to compare the ink of the present invention with an ink containing a colorant whose particle size distribution is controlled within a specific range.

#### (3.1) Preparation of ink compositions:

##### Example A (the present invention)

An ink composition was prepared in the same manner as in Example 1 of the present invention except that the colorant, film-forming resin, water-soluble polymer, wetting agent and preservative specified below were used, together with water, in the respective proportions specified below.

Weight parts

Colorant : fluorescent blue resin beads 15.00

obtained by classifying

"Epocolor FP1050" by Nippon Shokubai

Average particle size 5.79  $\mu\text{m}$

Particles having a size of not more than 1.8  $\mu\text{m}$

accounting for 0.7% by weight and particles

having a size not less than 7  $\mu\text{m}$  accounting for

0.5% by weight

Film-forming resin: Styrene-butadiene rubber 15.00

Water-soluble polymer: Rhamsan gum 0.35

Wetting agent: Ethylene glycol 3.50

Dispersing agent: Sodium naphthalene-sulfonate- 0.50

formaldehyde condensate

Preservative: Sodium benzoate 1.00

Water 64.65

Comparative example A

An ink composition was prepared in the same manner as in Example A except using the coloant "Epocolor FP1050" without the classifiction (i.e. the colorant having an average particle size of 3.23  $\mu\text{m}$  (the particles having a size of not more than 1.8  $\mu\text{m}$  accounting for 15.7% by weight

and the particles having a size of not less than 7  $\mu\text{m}$  accounting for 5.2% by weight)

### (3.2) Test Example

The ink compositions prepared in Example A and Comparative Example A were used to produce aqueous ink-filled ballpoint pens. The ballpointpens were tested for their erasability, fixability, ink dischargeability, storability and cap-off performance in the same manner as Test Example 1 of the present invention. The results are shown in Table A. Table A also shows the result of Example 1 of the present invention.

Table A

	Erasa- bility	Fix- ability	Ink discharge- ability(mg)	Stora- bility	Cap off performance
Example A	72.1	○	120	○	△
Compar.Ex.A	70.2	○	90	○	△

### (4) Consideration

(4.1) As is clear from Table A, since the ink

composition of Example A includes the colorant with the controlled particle size, the excellent erasability(=72.1) and ink discharge ability(=120) can be obtained.

In contrast, Comparative example A using the colorant whose particle size distribution is not controlled shows low erasability(=70.2) and ink discharge ability(=90).

Thus, the ink composition of Example A can achieve more excellent erasability with the same amount of film-forming resin as Comparative example A.

I, the undersigned, declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the

validity of the application or any patent issuing  
thereon.

Date: October 22, 2002, Shinji Tsujio

Shinji TSUJIO